



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

Fundamentals of Satellite Communications (SATCOM)  
SKMM Academy, Cyberjaya 16-18 July 2012

**PROGRAMME AGENDA - DAY 1**

Time	Module/Activity	Trainer	Duration	
8.30 - 9.00am	Registration		30 mins	
9.00 - 9.20am	Opening Address by Chairman, SKMM		20 mins	
9.20 - 9.30am	Group Photo Session		10 mins	<b>Learning Objectives – Acquire sound understandings on;</b>
9.30 - 10.30am	Topic 1: Introduction to SATCOM <ul style="list-style-type: none"> <li>History of Satellite Communications</li> <li>Overview of Satellite Communications</li> </ul>	Prof Tharek WCC UTM	60 mins	<ul style="list-style-type: none"> <li>What is Satellite and How it Works</li> <li>Types of Satellites</li> <li>Spectrum Used</li> </ul>
10.30– 11.00am	Tea Break		30 mins	
11.00– 1.00pm	Topic 2: Orbital Mechanics <ul style="list-style-type: none"> <li>Orbit Mechanics</li> <li>Look Angle Determinations</li> <li>Orbit Determination</li> <li>Demonstration + Case Study</li> </ul>	Prof Tharek WCC UTM	120 mins	<ul style="list-style-type: none"> <li>Planetary laws</li> <li>Orbital elements</li> <li>Determine “Angle “to Adjust Towards Geo Satellite</li> </ul>
1.00 – 2.00pm	Lunch		60 mins	
2.00 – 3.30pm	Topic 3: Satellite Link Design <ul style="list-style-type: none"> <li>Basic Transmission Theory</li> <li>System Noise Temperature and G/T</li> </ul>	Prof Tharek WCC UTM	90 mins	<ul style="list-style-type: none"> <li>C/N Ratio Calculation - Satellite Communication Design</li> <li>Noise Sources</li> <li>How Thermal Noise being Generated - Receiving System</li> </ul>
3.30 – 4.00pm	Tea Break		30 mins	
4.00 – 5.30pm	Topic 3: Satellite Link Design (continued) <ul style="list-style-type: none"> <li>Link Budget</li> <li>Demonstration + Case Study</li> </ul>	Prof Tharek WCC UTM	90 mins	<ul style="list-style-type: none"> <li>Satellite Link Budgets</li> </ul>
5.30pm	Day 1 ends			



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**PROGRAMME AGENDA - DAY 2**

Time	Module/Activity	Trainer	Duration	Learning Objectives – Acquire sound understandings on;
8.30 - 10.30am	Topic 4: Propagation Effects <ul style="list-style-type: none"> <li>• Attenuation and Depolarization</li> <li>• Rain Effects</li> <li>• Prediction of Rain Attenuation</li> <li>• Demonstration+ Case Study</li> </ul>	Prof Tharek WCC UTM	120 mins	<ul style="list-style-type: none"> <li>• Satellite Propagation Factors &amp; it's Impact</li> <li>• The Link Budget: Propagation Signal Loss, Rain</li> </ul>
10.30 – 11.00am	Tea Break		30 mins	
11.00 - 1.00pm	Topic 5: Int'l Legal & Organisational Frameworks <ul style="list-style-type: none"> <li>• International Telecommunications Union (ITU) and Radio Regulations</li> <li>• Regional Planning &amp; World Radiocommunication Conference (WRC)</li> </ul>	Ir. Hj Zaki SKMM Academy	120 mins	<ul style="list-style-type: none"> <li>• Role of ITU, Memberships Tiers &amp; Costs</li> <li>• ITU Reference Documents</li> <li>• The Role of WRC, Key Players &amp; WRC Meetings</li> <li>• How Resolutions Arrives</li> <li>• Key Resolutions during Previous WRCs</li> </ul>
1.00 – 2.00pm	Lunch Break		60 mins	
2.00 – 3.30pm	Topic 6: Harmonisation and Coordination <ul style="list-style-type: none"> <li>• Terrestrial (Border) Coordination</li> <li>• Satellite Coordination</li> </ul>	Hj Shamsul Najib SKMM	90 mins	<ul style="list-style-type: none"> <li>• Satellite Coordination Process and Procedures</li> </ul>
3.30 – 4.00pm	Tea Break		30 mins	
4.00 – 5.30pm	Topic 7: How Spectrum is Managed <ul style="list-style-type: none"> <li>• Role of SKMM</li> <li>• Overview of Spectrum Management</li> <li>• Assignment of Spectrum</li> </ul>	Ir. Haji Zaki SKMM Academy	90 mins	<ul style="list-style-type: none"> <li>• Role of SKMM in Managing Spectrum</li> <li>• Processes related to Spectrum Management</li> <li>• Types of Assignments; Costs and Application Processes</li> </ul>
5.30pm	Day 2 ends			



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**PROGRAMME AGENDA - DAY 3**

Time	Module/Activity	Trainer	Duration	Learning Objectives – Acquire sound understandings on;
8.30 - 10.00am	Topic 8: Satellite Subsystems <ul style="list-style-type: none"> <li>• Attitude &amp; Orbit Control Subsystems (AOCS)</li> <li>• Telemetry and Commanding</li> <li>• Power, Propulsion</li> <li>• Thermal, Structure</li> <li>• Communication</li> </ul>	Zainudin Abdul MEASAT	90 mins	<ul style="list-style-type: none"> <li>• Major satellite components</li> <li>• Functional descriptions</li> <li>• Usage</li> </ul>
10.00 – 10.30am	Tea Break		30 mins	
10.30am - 2.00pm	Topic 9: In-Orbit Operations and Station Keeping <ul style="list-style-type: none"> <li>• Space Geometrical Event</li> <li>• Station Keeping Principles</li> <li>• Orbit Perturbations + Type of Manoeuvre</li> </ul>	Zainudin Abdul MEASAT	90 mins	<ul style="list-style-type: none"> <li>• Orbit disturbances</li> <li>• Process of keeping satellite in the orbital box</li> </ul>
12.00 – 1.30pm	Lunch Break		90 mins	
1.30 – 2.30pm	Topic 10: Commercial Aspects of SATCOM	Yau Chyong Lim MEASAT	60 mins	<ul style="list-style-type: none"> <li>• Overview of various business aspects of Satellite Communications, including procurement and launch of satellite, market segments and challenges</li> </ul>
2.30 – 3.00pm	Movement to MEASAT Teleport & Broadcast Centre		30 mins	Visit to MEASAT Teleport & Broadcast Centre
3.00 – 5.00pm	Topic 11: MEASAT Teleport & Broadcast Centre <ul style="list-style-type: none"> <li>• Satellite Operation Centre</li> <li>• Network Management Centre</li> <li>• Antenna Farm</li> </ul>	MEASAT Corporate Communications	120 mins	Overview of MEASAT's Operation on: <ul style="list-style-type: none"> <li>• The Usage of Satellite</li> <li>• How to Operate Satellites in Space</li> <li>• The Functions of a Teleport</li> </ul>
5.00 – 5.30pm	<ul style="list-style-type: none"> <li>• Closing Ceremony</li> <li>• Award of Certificate + Refreshments</li> </ul>		30 mins	
5.30pm	Programme ends			